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**[Poster on] Psychometric properties of the Dutch Empathizing and Systemizing Quotient**

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# Psychometric properties of the Dutch Empathizing and Systemizing Quotient

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## Objective

The male brain hypothesis<sup>1</sup> predicts that individuals with autism spectrum disorder (ASD) are characterized by a low empathizing and high systemizing cognitive style.

**Empathizing:** “The drive to identify another person’s emotions and thoughts, and to respond to these with an appropriate emotion”.

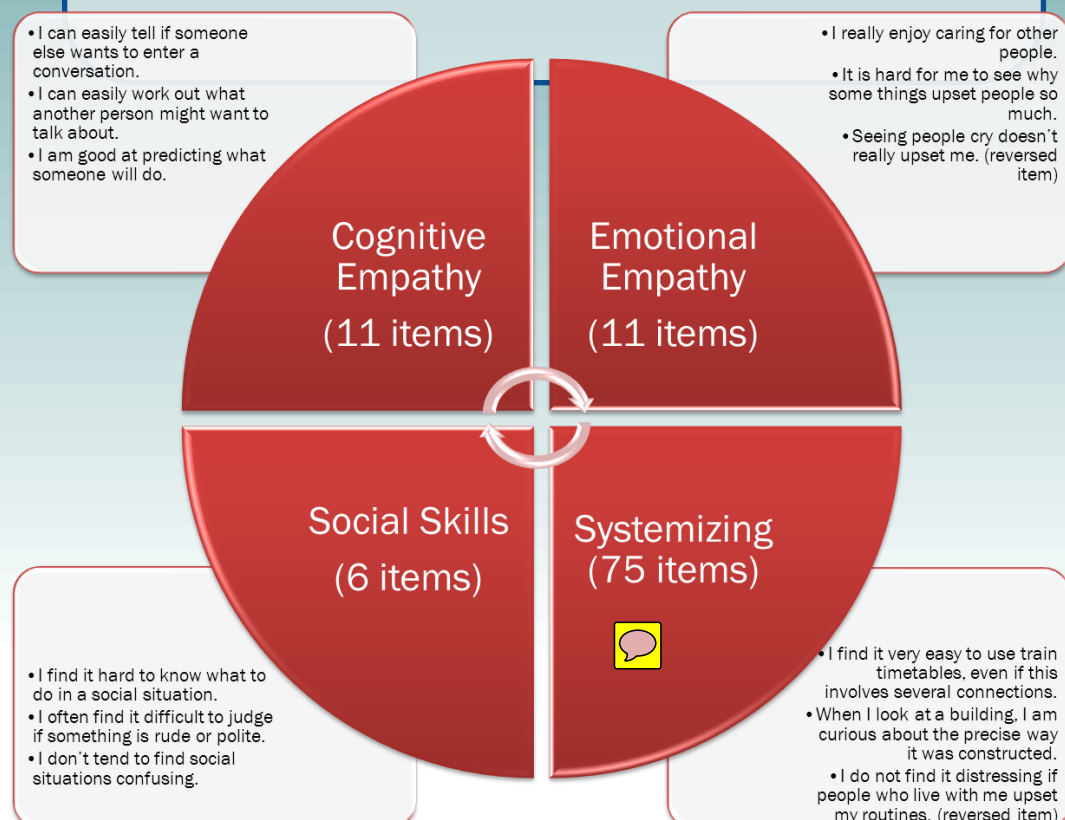
**Systemizing:** “The drive to analyze how systems work and behave, and to construct systems”

The internationally developed self-report questionnaires ‘Empathy Quotient’ (EQ) and ‘Systemizing Quotient-Revised’ (SQ-R) were translated to Dutch and their psychometric properties were investigated

## Factor structure

A 3-factor structure<sup>2</sup> of the shortened 28-item EQ was confirmed, and a 1-factor structure<sup>3</sup> of the 75-item SQ-R was replicated.

The figure shows the scales and examples of items:



## Methods

**Materials:** Dutch translation (YG, AdH) 40-item EQ and 75-item SQ-R; Friendship Questionnaire (FQ)

**Samples:** Community sample (n=685, males=270); sample of male ASD patients (n=2)

## Results

**Reliability:** Internal consistency (Cronbach's  $\alpha$ ) EQ=.89; SQ=.87) and test-retest reliability ( $r$ : EQ=.74; SQ=.79) was good. Only the EQ subscale Emotional Empathy had low retest reliability ( $r$ =.58).

**Convergent validity:**

- Typical sex differences on the EQ scales (f>m) and SQ (m>f) with large effect sizes (Cohen's  $D$ : EQ=.78; SQ=.76)
- Positive correlations between the EQ scales and FQ ( $r$ =.27-.50); negative correlations of SQ-R with the EQ total ( $r$ =-.11) and EQ subscale Emotional Empathy ( $r$ =-.17)

**Sensitivity:** The EQ scales and brain type (SQ minus EQ), but not the SQ-R, discriminated males with ASD from males of the community sample with large effect size (Cohen's  $D$ : EQ=.96; brain type=.68).

## Conclusions

The Dutch 28-item EQ and the SQ-R are reliable and valid tools to assess a person's empathizing and systemizing cognitive style. For autism, these tools are helpful in describing the subjectively experienced difficulties and strengths of the patient in processing social and non-social information. Especially the EQ subscales quickly provide additional information on the specific aspects of social information processing that may be impaired. Emotional empathy should be interpreted merely as a state than as a trait.

## Literature

<sup>1</sup>Baron-Cohen, S. (2009). Autism: The empathizing-systemizing (E-S) theory. Year in Cognitive Neuroscience 2009, 1156, 68-80.

<sup>2</sup>Lawrence, E. J., Shaw, P., Baker, D., Baron-Cohen, S., & David, A. S. (2004). Measuring empathy: Reliability and validity of the empathy quotient. Psychological Medicine, 34(5), 911-919.

<sup>3</sup>Wheelwright, S., Baron Cohen, S., Goldenfeld, N., Delaney, J., Fine, D., & Smith, R. (2006). Predicting autism spectrum quotient (AQ) from the systemizing quotient-revised (SQ-R) and empathy quotient (EQ). Brain Research, 1079(1), 47-56.